Figure 1

Surface mIgM in B-cells

IgαIgβ   Igβ Igα

Receptors
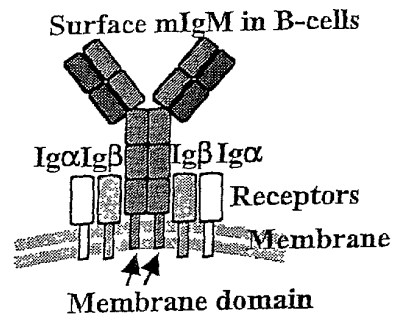
Membrane

Membrane domain

Figure 2

A

Igα-1S (sense oligo for Igα containing and SpeI and HindIII cloning sites)
5′ TAG TGA ACT AGT AAG CTT GCC ACC ATG CCA GGG GGT CTA GAA GCC CTC A 3′

Igα-221A (antisense oligo for Igα containing EcoRI and ClaI cloning sites)
5′ GTC TAG ATC GAT GAA TTC TCA TGG CTT TTC CAG CTG GGC ATC 3′

Igβ-1S (sense oligo for Igβ containing SpeI and HindIII cloning sites)
5′ TAG TGA ACT AGT AAG CTT GCC ACC ATG GCC ACA CTG GTG CTG TCT TCC ATG 3′

IgB-229A (antisense oligo for Igβ containing XhoI and ClaI cloning sites)
5′ GTC TAG ATC GAT CTC GAG TCA TTC CTG GCC TGG ATG CTC TCC TAC CGA 3′

B.

~700 bp-

Figure 3

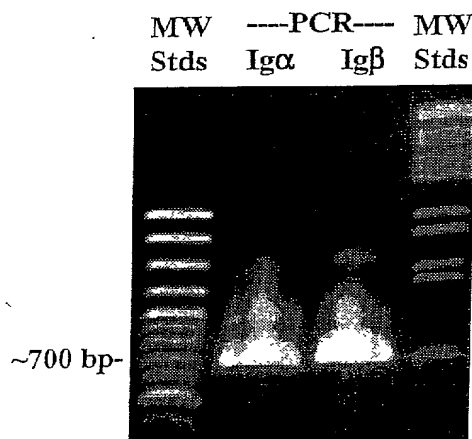**p3.1NeoIg_**   Length: 681
        Translation

```
HindIII  Signal M   P    G    G    L    E    A    L    R    A    L   ·P    L
AAGCTT  GCCACC ATG  CCA  GGG  GGT  CTA  GAA  GCC  CTC  AGA  GCC  CTG  CCT  CTC


   L    L    F    L    S    Y    A    C    L    G    P    G    C    Q    A    L    R
  CTC  CTC  TTC  TTG  TCA  TAC  GCC  TGT  TTG  GGT  CCC  GGA  TGC  CAG  GCC  CTG  CGG


   V    E    G    G    P    P    S    L    T    V    N    L    G    E    E    A    R
  GTA  GAA  GGG  GGT  CCA  CCA  TCC  CTG  ACG  GTG  AAC  TTG  GGC  GAG  GAG  GCC  CGC


   L    T    C    E    N    N    G    R    N    P    N    I    T    W    W    F    S
  CTC  ACC  TGT  GAA  AAC  AAT  GGC  AGG  AAC  CCT  AAT  ATC  ACA  TGG  TGG  TTC  AGC


   L    Q    S    N    I    T    W    P    P    V    P    L    G    P    G    Q    G
  CTT  CAG  TCT  AAC  ATC  ACA  TGG  CCC  CCA  GTG  CCA  CTG  GGT  CCT  GGC  CAG  GGT


   T    T    G    Q    L    F    F    P    E·   V    N    K    N    H    R    G    L
  ACC  ACA  GGC  CAG  CTG  TTC  TTC  CCC  GAA  GTA  AAC  AAG  AAC  CAC  AGG  GGC  TTG


   Y    W    C    Q·   V    I    E    N    N    I    L    K    R    S    C    G    T
  TAC  TGG  TGC  CAA  GTG  ATA  GAA  AAC  AAC  ATA  TTA  AAA  CGC  TCC  TGT  GGT  ACT


   Y    L    R    V    R    N    P    V    P    R    P    F    L    D    M    G    E
  TAC  CTC  CGC  GTG  CGC  AAT  CCA  GTC  CCT  AGG  CCC  TTC  CTG  GAC  ATG  GGG  GAA


   G    T    K    N    R    I    I    T    A    E    G    I    I    L    L    F    C
  GGT  ACC  AAG  AAC  CGC  ATC  ATC  ACA  GCA  GAA  GGG  ATC  ATC  TTG  CTG  TTC  TGT


   A    V    V    P    G    T    L    L    L    F    R    K    R    W    Q    N    E
  GCA  GTG  GTG  CCA  GGG  ACG  CTG  CTG  CTA  TTC  AGG  AAA  CGG  TGG  CAA  AAT  GAG


   K    F    G    V    D    M    P    D    D    Y    E    D    E    N    L    Y    E
  AAG  TTT  GGG  GTG  GAC  ATG  CCA  GAT  GAC  TAT  GAA  GAT  GAA  AAT  CTC  TAT  GAG


   G    L    N    L    D    D    C    S    M    Y    E    D    I    S    R    G    L
  GGC  CTG  AAC  CTT  GAT  GAC  TGT  TCT  ATG  TAT  GAG  GAC  ATC  TCC  AGG  GGA  CTC


   Q    G    T    Y    Q    D    V    G    N    L    H    I    G    D    A    Q    L
  CAG  GGC  ACC  TAC  CAG  GAT  GTG  GGC  AAC  CTC  CAC  ATT  GGA  GAT  GCC  CAG  CTG


   E    K    P    *    EcoRI
  GAA  AAG  CCA  TGA  GAATTC
```

Figure 4

```
p3.1ZeoIg_    Length: 705
       Translation
HindIII Signal M    A    T    L    V    L    S    S    M    P    C    H    W
AAGCTT GCCACC ATG  GCC  ACA  CTG  GTG  CTG  TCT  TCC  ATG  CCC  TGC  CAC  TGG


L    L    F    L    L    L    L    F    S    G    E    P    V    P    A    M    T
CTG  TTG  TTC  CTG  CTG  CTG  CTC  TTC  TCA  GGT  GAG  CCG  GTA  CCA  GCA  ATG  ACA


S    S    D    L    P    L    N    F    Q    G    S    P    C    S    Q    I    W
AGC  AGT  GAC  CTG  CCA  CTG  AAT  TTC  CAA  GGA  AGC  CCT  TGT  TCC  CAG  ATC  TGG


Q    H    P    R    F    A    A    K    K    R    S    S    M    V    K    F    H
CAG  CAC  CCG  AGG  TTT  GCA  GCC  AAA  AAG  CGG  AGC  TCC  ATG  GTG  AAG  TTT  CAC


C    Y    T    N    H    S    G    A    L    T    W    F    R    K    R    G    S
TGC  TAC  ACA  AAC  CAC  TCA  GGT  GCA  CTG  ACC  TGG  TTC  CGA  AAG  CGA  GGG  AGC


Q    Q    P    Q    E    L    V    S    E    E    G    R    I    V    Q    T    Q
CAG  CAG  CCC  CAG  GAA  CTG  GTC  TCA  GAA  GAG  GGA  CGC  ATT  GTG  CAG  ACC  CAG


N    G    S    V    Y    T    L    T    I    Q    N    I    Q    Y    E    D    N
AAT  GGC  TCT  GTC  TAC  ACC  CTC  ACT  ATC  CAA  AAC  ATC  CAG  TAC  GAG  GAT  AAT


G    I    Y    F    C    K    Q    K    C    D    S    A    N    H    N    V    T
GGT  ATC  TAC  TTC  TGC  AAG  CAG  AAA  TGT  GAC  AGC  GCC  AAC  CAT  AAT  GTC  ACC


D    S    C    G    T    E    L    L    V    L    G    F    S    T    L    D    Q
GAC  AGC  TGT  GGC  ACG  GAA  CTT  CTA  GTC  TTA  GGA  TTC  AGC  ACG  TTG  GAC  CAA


L    K    R    R    N    T    L    K    D    G    I    I    L    I    Q    T    L
CTG  AAG  CGG  CGG  AAC  ACA  CTG  AAA  GAT  GGC  ATT  ATC  TTG  ATC  CAG  ACC  CTC


L    I    I    L    F    I    I    V    P    I    F    L    L    L    D    K    D
CTC  ATC  ATC  CTC  TTC  ATC  ATT  GTG  CCC  ATC  TTC  CTG  CTA  CTT  GAC  AAG  GAT


D    G    K    A    G    M    E    E    D    H    T    Y    E    G    L    N    I
GAC  GGC  AAG  GCT  GGG  ATG  GAG  GAA  GAT  CAC  ACC  TAT  GAG  GGC  TTG  AAC  ATT


D    Q    T    A    T    Y    E    D    I    V    T    L    R    T    G    E    V
GAC  CAG  ACA  GCC  ACC  TAT  GAA  GAC  ATA  GTG  ACT  CTT  CGG  ACA  GGG  GAG  GTA


K    W    S    V    G    E    H    P    G    Q    E    *    XhoI
AAG  TGG  TCG  GTA  GGA  GAG  CAT  CCA  GGC  CAG  GAA  TGA  CTCGAG
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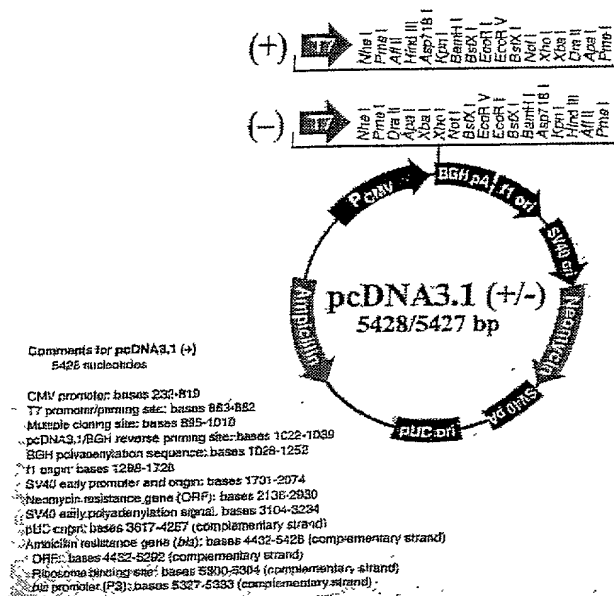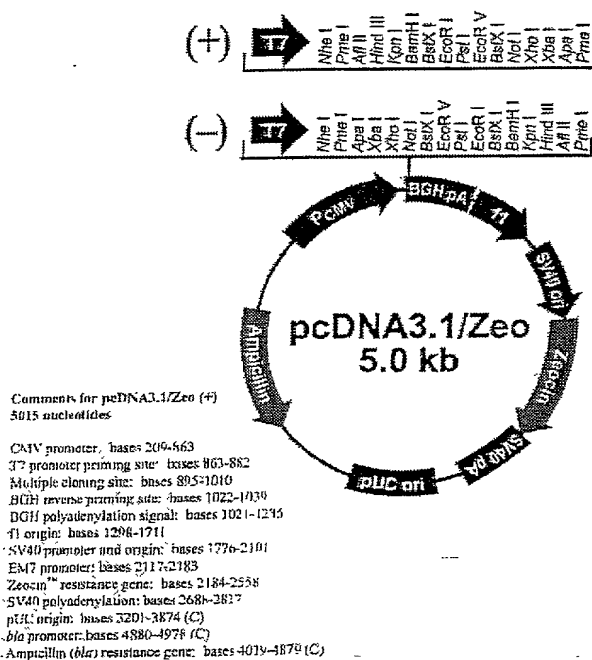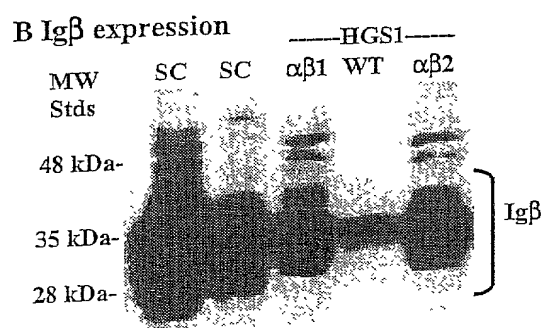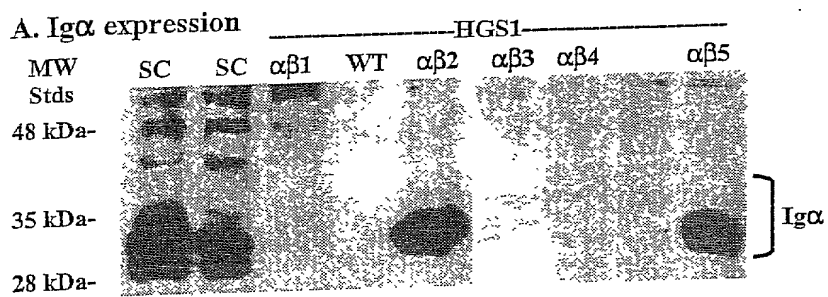
Figure 5

Comments for pcDNA3.1 (+)
5428 nucleotides

CMV promoter: bases 232-819
T7 promoter/priming site: bases 863-882
Multiple cloning site: bases 895-1010
pcDNA3.1/BGH reverse priming site: bases 1022-1039
BGH polyadenylation sequence: bases 1028-1252
f1 origin: bases 1298-1726
SV40 early promoter and origin: bases 1731-2074
Neomycin resistance gene (ORF): bases 2136-2930
SV40 early polyadenylation signal: bases 3104-3234
pUC origin: bases 3617-4287 (complementary strand)
Ampicillin resistance gene (bla): bases 4432-5428 (complementary strand)
ORF: bases 4432-5292 (complementary strand)
Ribosome binding site: bases 5300-5304 (complementary strand)
bla promoter (P3): bases 5327-5333 (complementary strand)

Figure 6

Comments for pcDNA3.1/Zeo (+)
5015 nucleotides

CMV promoter: bases 209-863
T7 promoter priming site: bases 863-882
Multiple cloning site: bases 895-1010
BGH reverse priming site: bases 1022-1039
BGH polyadenylation signal: bases 1021-1245
f1 origin: bases 1298-1711
SV40 promoter and origin: bases 1776-2101
EM7 promoter: bases 2117-2183
Zeocin™ resistance gene: bases 2184-2558
SV40 polyadenylation: bases 2688-2817
pUC origin: bases 3201-3874 (C)
bla promoter: bases 4880-4978 (C)
Ampicillin (bla) resistance gene: bases 4019-4879 (C)

Figure 7.

A. Igα expression

B Igβ expression

Figure 8

Figure 8 (continued)

I. HGS1a (enlarged cells)   J. HGS1αβ6 (enlarged cells)
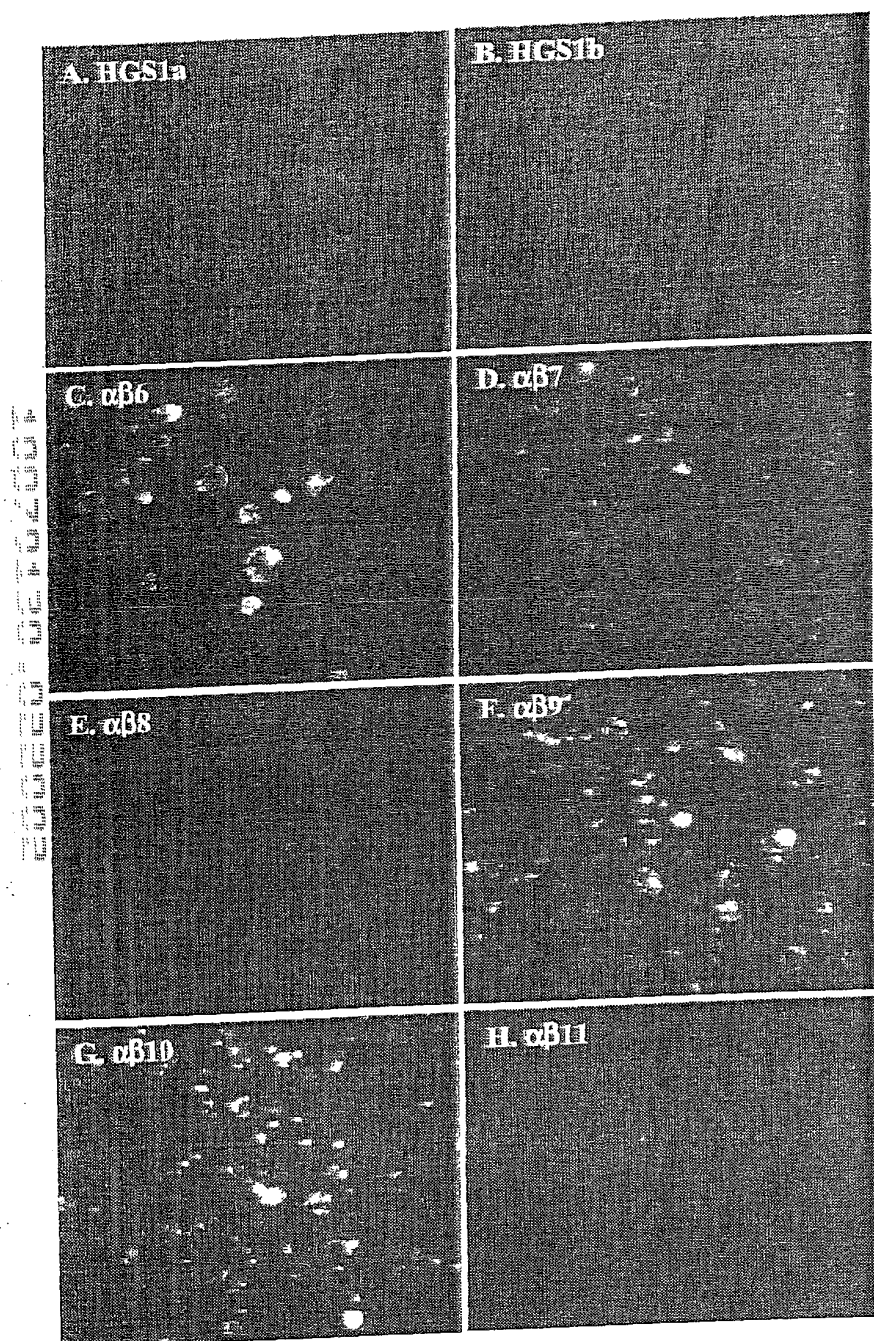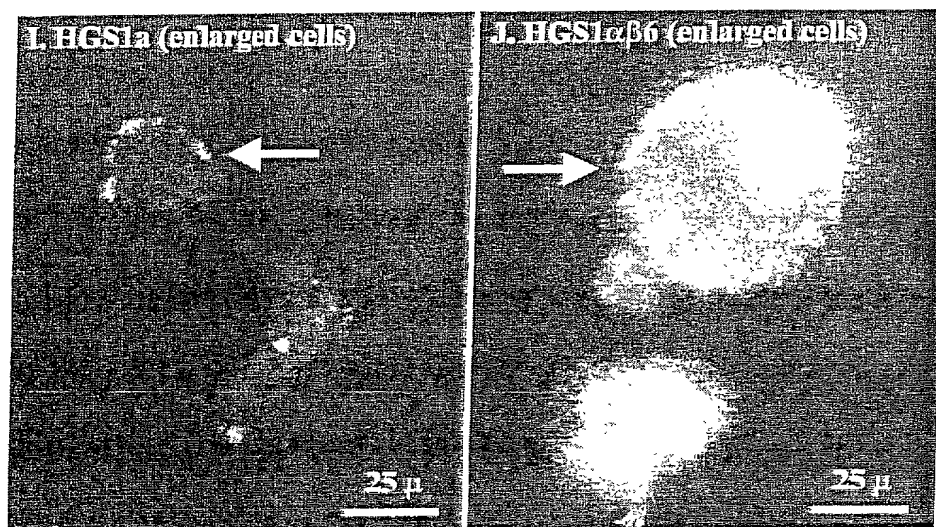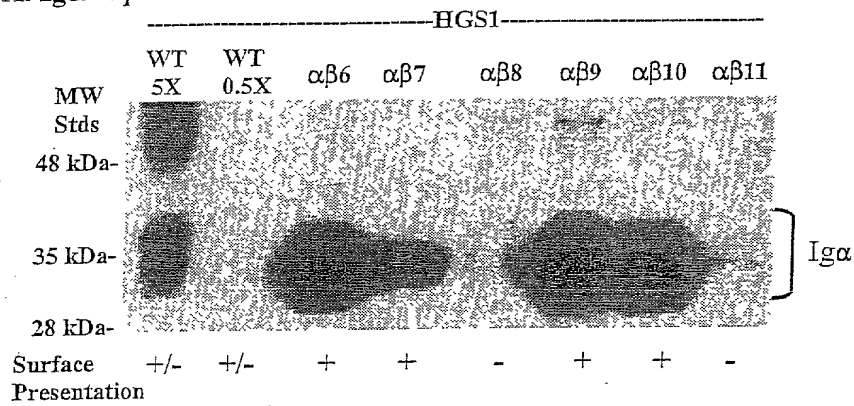
Figure 9

A. Igα expression

B. Comassie stained protein

Figure 10

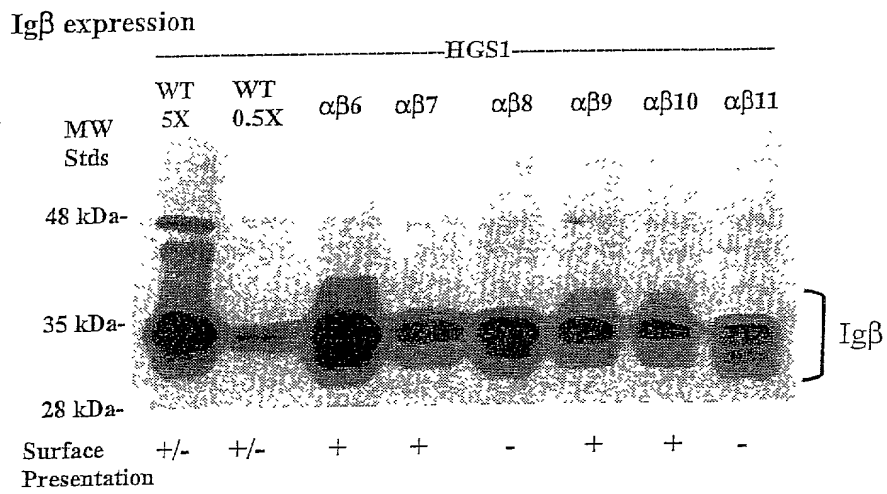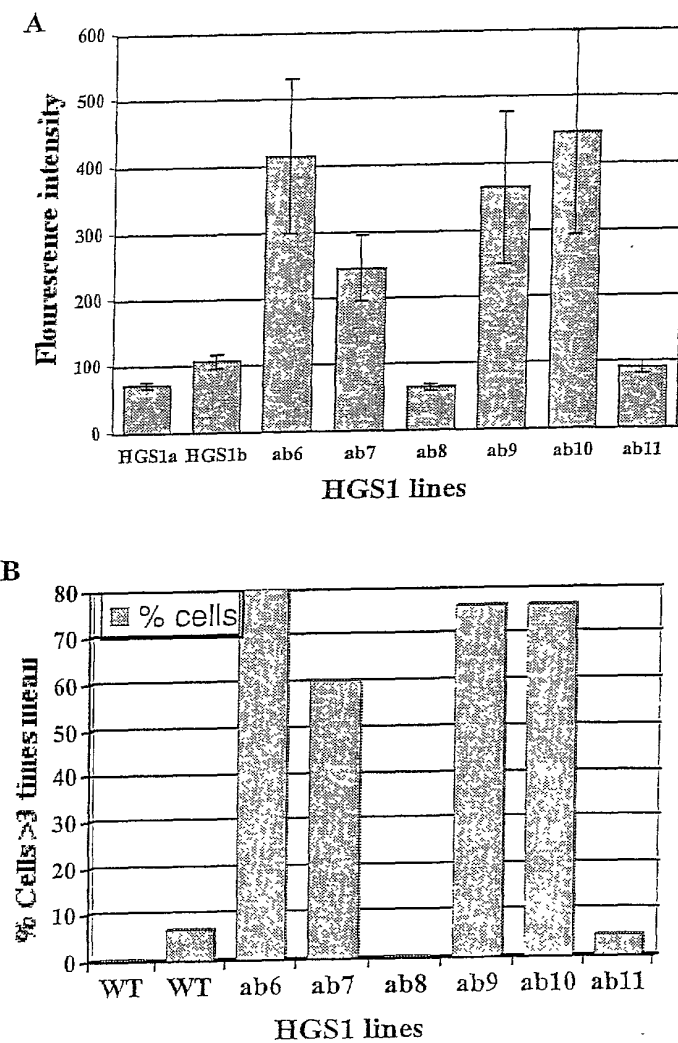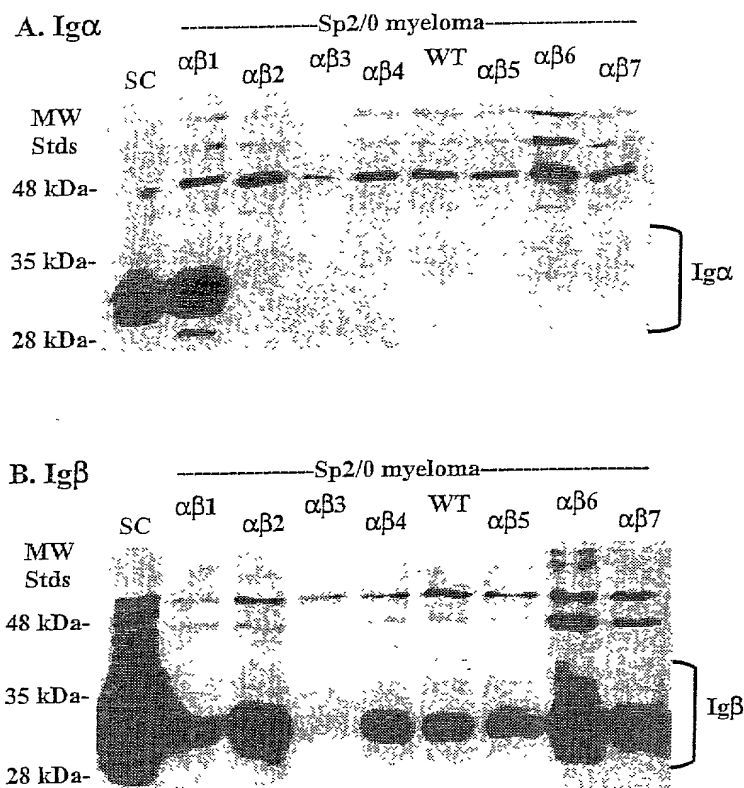Igβ expression

	WT 5X	WT 0.5X	αβ6	αβ7	αβ8	αβ9	αβ10	αβ11
Surface Presentation	+/-	+/-	+	+	-	+	+	-

Figure 11

A

B

Figure 12

A. Igα

B. Igβ

Figure 13